Exhibit D

NAPA VALLEY VINEYARD ENGINEERING, INC.

176 MAIN STREET, SUITE B
ST. HELENA, NAPA VALLEY, CALIFORNIA 94574
(707) 963-4927 nvvedla@comcast.net

DREW L. ASPEGREN, P.E.
CIVIL ENGINEER

JOHNSON VINEYARD
3363 Hwy 128
EROSION CONTROL PLAN FOR NEW VINEYARD
File #P19-00220-ECPA

WATER DEMAND AND WATER AVAILABILITY ANALYSIS
April 22, 2019, Rev January 10, 2020

Water Demand

It is proposed that the new vineyard (±7.09 net acres) and the existing vineyard (±11.21 net acres) will be irrigated using groundwater. This analysis presents water demand for all uses on the property. The average annual vineyard water demand is:

(18.30 net vine acres)(1,245 vines/ac) = 22,784 new vines
(22,784 vines)(75 gal/vine/yr)/(325,851 gal/af) = 5.24 afa (acre-feet per annum)

Water is also used for frost control, in April, on 2 acres in Block 2 and the same system will be installed in Blocks 2A (0.08 net acres) and F (0.72 net acres), a total of 2.80 acres. The system utilizes misters which flow at 20 gallons per minute per acre; average annual use has been 10 hours/year with an historical peak day of 7.5 hours. Therefore:

average use = (2.80 ac)(20 gpm/ac)(10 hours) = 0.11 afa
peak daily use = (2.80 ac)(20 gpm/ac)(7.5 hours) = 25,200 gpd

Also on the property is a residence (2 occupants), a covered pool, ±2,500 square feet of lawn and less than 1,000 square feet of xeriscape landscaping. Water demand for these features, per attached sheet, is 0.38 afa (±675 gal/day). The total average water demand for all uses (frost + irrigation + domestic) on the property is 5.73 afa. All the water will be drawn from the existing well.

Peak vineyard irrigation is expected to be 5 gallons/vine/week. Assuming a 5 day irrigation cycle, average daily operation will irrigate 4,556 vines (22,784 vines/5 days); allowing for 10% increase because of varying convenient irrigation set sizes, peak daily vineyard irrigation will cover ±5,015 vines. Peak daily vineyard irrigation demand is then ±25,075 gallons (5,015 vines x 5 gal); including residential uses, total peak daily demand = ±25,750 gallons. Although peak daily vineyard water demand occurs on the day of the longest frost control event, pool evaporation and landscape irrigation will zero, so on that day, total peak daily demand will be 24,725 gallons, less than the peak

day during summertime irrigation. The pump in the existing well delivers 50 gallons per minute, and it will need to operate about 8.5 hours/day to meet peak daily demand (25,075 gallons). Attached is the driller's log (EXHIBIT A), which demonstrates the ability of the well to perform at that level.

Water Availability

The soils on the property are mapped as Forward gravelly loam and Forward-Kidd complex (USDA, SCS Soil Survey of Napa County) which are derived from the underlying volcanic parent material. It has been estimated that about 9-13% of rainfall which falls on these volcanics percolates into the underlying formation and appears in the deep aquifers (USGS Water Resources Investigation 77-82, Michael Johnson, 1977); the remaining 87-91% flows off site as direct runoff or is held in the topsoils to be evapotransported by surface vegetation. The 40.00 acre Johnson parcel receives an average annual rainfall of 23.9" (Napa County Flood Control and Water Conservation District Isohyetal Rainfall Map, 1975). On average, the property will receive ±130 afa of rainfall (40.00 ac x 39" = 130.00 af). Using a conservative estimate of 10% appearing as annual groundwater recharge, it is expected that the Johnson property would contribute an average of ±13.00 afa to the groundwater supply annually.

The Isohyetal Rainfall map shows that, on average, Johnson receives about 122% of St. Helena rainfall (St. Helena = 32"/yr). NOAA rainfall records for St. Helena show that 18.15" fell during 2013-14 and 26.27" during 2014-15. We consider 2014-15 to be a "dry year" (±77% of average), and 2013-14 to be an "extremely dry year (±53% of average). Assuming 122% of that rainfall at Johnson, and using the same analysis presented above, it is expected that for 2013-14, ±73.81 acre-feet (af) would fall on the 40.00 acre property, and ±7.38 af would appear as groundwater. Similarly, for 2014-15, 87.57 af would fall on the property and ±8.58 af would appear as groundwater.

Conclusions

Total average annual water demand is ±5.73 afa, or about 44% of the subject property's average annual groundwater recharge (5.73/13.00 =44.1%). Further, the 5.73 afa total water demand then would be ±77% (5.73/7.38) of the 2013-14 rainfall contribution to groundwater, and ±67% (5.73/8.58) during 2014-15. Over the long term, it is expected that using groundwater to support the proposed project will not diminish the underlying aquifer. Even during those back to back dry years, it is expected that vineyard irrigation would not have diminished the underlying aquifer nor impacted other wells.

Attached is EXHIBIT B, portions of the Calistoga and Mark West Springs Quad sheets showing the project site and the site of the existing well which supports the property. A 500' radius circle has been drawn centered on the new well. No known wells lie within 500' of the project well.

JOHNSON VINEYARD
NON-VINEYARD WATER DEMAND

	afa	peak gpd
Residence: 2 people @ 100 gpd, 365 days/year	0.224	200
Covered pool	0.050	100
Lawn: ± 2,500 sf @ 2af/ac/yr/100 days	0.110	375
Total	0.384	675

File with DWR

Page 1 of 1

Owner's Well No. _____

Date Work Began 3-27-96 , Ended 4-9-96

Local Permit Agency Napa Co. Dept. of Environmental Mgmt

Permit No. 41311 Permit Date 1-24-96

WELL COMPLETION REPORT

Refer to Instruction Pamphlet

No. 547471

JOHNSON, ED

STATE WELL NO./STATION NO.

LATITUDE LONGITUDE

APN/TRS/OTHER

GEOLOGIC LOG

ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)

DEPTH TO FIRST WATER ___ (Ft.) BELOW SURFACE

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	30	Brown clay & rock
30	45	Grey Rock
45	90	Grey, black, green, brown rock
90	100	Grey & Black rock, stringers of Grey rock
100	155	Grey, black, brown, white, red rock
155	200	Grey, white, brown rock
200	205	Sandy brown clay

CONTINUED FROM BELOW

		BLANK	SCREEN	SLOT SIZE
140	160	x		
160	200		x	.030

TOTAL DEPTH OF BORING 205 (Feet)

TOTAL DEPTH OF COMPLETED WELL 200 (Feet)

WELL OWNER

Name Ed Johnson

Mailing Address 3363 Highway 128

Calistoga (CITY) Ca (STATE) (ZIP)

WELL LOCATION

Address 3363 Highway 128

City Calistoga Ca

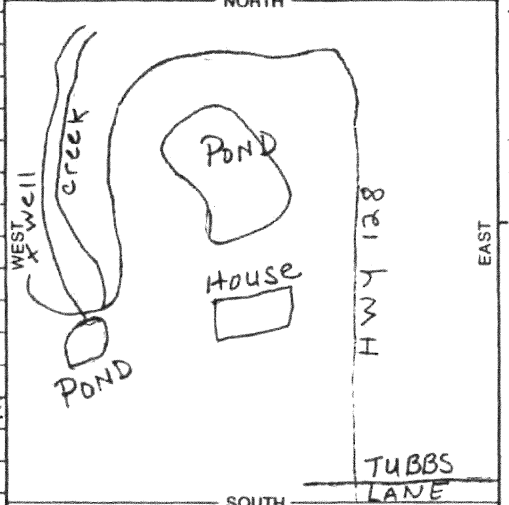
County Napa

APN Book 17 Page 160 Parcel 36

or Township ___ Range ___ Section ___

or Latitude ___ DEG. ___ MIN. ___ SEC. NORTH Longitude ___ DEG. ___ MIN. ___ SEC. W

LOCATION SKETCH



Illustrate or Describe Distance of Well from Landmarks such as Roads, Buildings, Fences, Rivers, etc.
PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

X NEW WELL

MODIFICATION/REPAIR

___ Deepen

___ Other (Specify)

___ DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG")

PLANNED USE (✓)

___ MONITORING

WATER SUPPLY

___ Domestic

___ Public

X Irrigation

___ Industrial

___ "TEST WELL"

___ CATHODIC PROTECTION

___ OTHER (Specify)

DRILLING METHOD Rotary FLUID Mud

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH OF STATIC WATER LEVEL 25 (Ft.) & DATE MEASURED 4-8-96

ESTIMATED YIELD* 100 (GPM) & TEST TYPE Air lift

TEST LENGTH 5 (Hrs.) TOTAL DRAWDOWN 55 (Ft.)

** May not be representative of a well's long-term yield.*

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	CASING(S) TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL/GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	40	16"	x				F-480	8"	CL 200	
40	60			x						.030
60	80		x							
80	100			x						.030
100	120		x							
120	140			x						.030

DEPTH FROM SURFACE Ft.	to Ft.	ANNULAR MATERIAL TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	27	x			
27	29		x		
29	200			x	Pea Gravel

ATTACHMENTS (✓)

___ Geologic Log

___ Well Construction Diagram

___ Geophysical Log(s)

___ Soil/Water Chemical Analyses

___ Other ___

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

NAME Doshier-Gregson Inc. (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

ADDRESS 5365 Napa-Vallejo Hwy CITY American Canyon, STATE Ca ZIP 94589

Signed Raymond Skebster (WELL DRILLER/AUTHORIZED REPRESENTATIVE) DATE SIGNED 4/11/96

C-57 LICENSE NUMBER 258826

DWR 188 REV 7-90

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

CUSTOMER NAME Ed Johnson

Owner Ed Johnson

Address 3363 HWY 128

City/State/Zip Calistoga, 94515

Phone 942-8754

Date Installed 6-3-96

Model Jacuzzi 75S650-15 /Franklin Motor

Serial # 28 Feb 96 3L 95

Diameter Well 8" Depth 200

Static 26 Pumping Level

Pump Setting 147 Size Pipe 2" galv. Size Cable 6-3

Replacement:

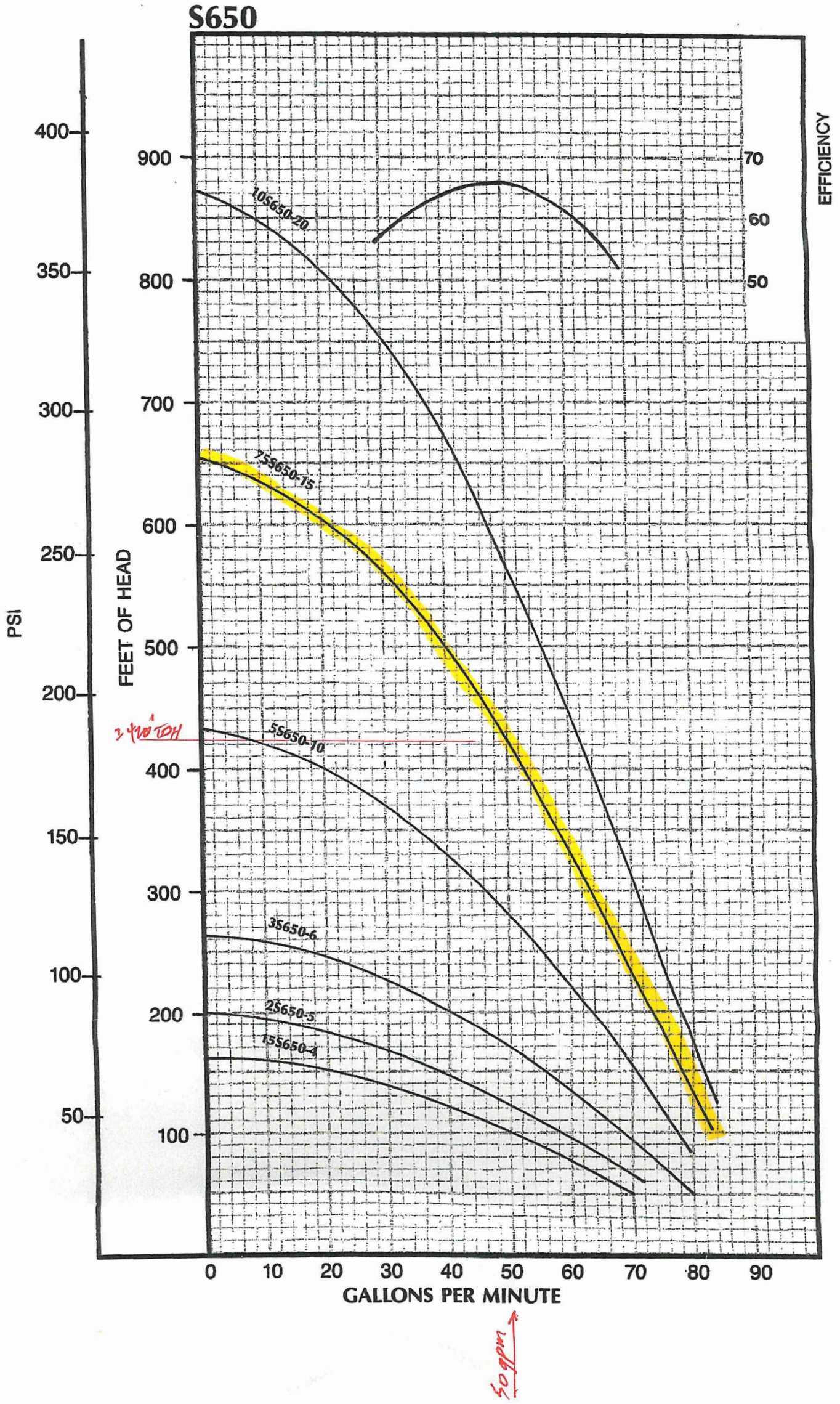
Date: Serial # Model #

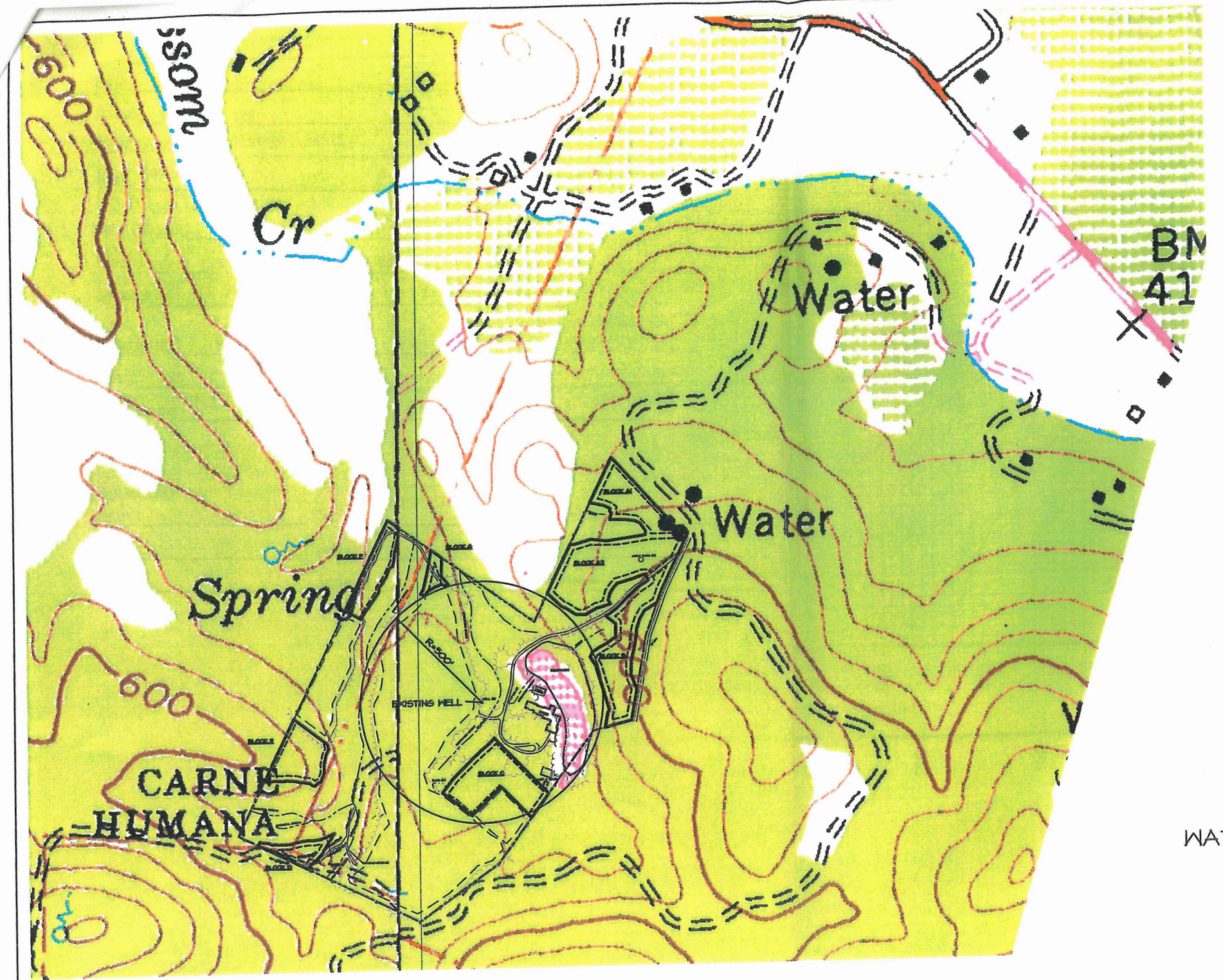
Date: Serial # Model #

Date: Serial # Model #

JACUZZI®

SandHandler High Capacity 6" - 50GPM Performance Curves





SCALE: 1"=400'
CONTOUR INTERVAL=40'

JOHNSON VINEYARDS
3363 HWY 128
WATER AVAILABILITY ANALYSIS
WELL LOCATION MAP
APRIL 22, 2019

PORTION OF CALISTOGA AND MARK WEST SPRINGS QUAD MAP

EXHIBIT B